

Additional notes on the genus *Apodynerus* Giordani Soika, 1993 (Hymenoptera: Vespidae: Eumeninae) from the Indian subcontinent

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Abstract

Apodynerus formosensis indicus Giordani Soika, 1994, is recorded here for the first time from India. Two new synonyms for *Apodynerus troglodytes troglodytes* (de Saussure, 1856) are proposed, namely, *Antepipona malabarica* Lambert, 2004, syn. n. and *Antepipona narendrani* Lambert, 2004, syn. n. The parasitic association of Strepsiptera is reported here for the first time in the genus *Apodynerus*.

Keywords: *Apodynerus*, Indian subcontinent, taxonomy, New Synonymy, new record, ethology.

Introduction

Apodynerus is an Oriental genus currently having eleven species with three additional subspecies (Nugroho et al. 2014), of which three taxa, namely *Apodynerus formosensis indicus* Giordani Soika, 1994, *A. icarioides* (Bingham, 1897) and *A. troglodytes troglodytes* (de Saussure, 1856) are recorded from the Indian subcontinent (Girish Kumar et al. 2013). This paper is the continuation of the study by Girish Kumar et al. (2013). We record *Apodynerus formosensis indicus* Giordani Soika, 1994, for the first time from India. We also examined the holotypes of *Antepipona malabarica* Lambert, 2004, and *Antepipona narendrani* Lambert, 2004, and came to the conclusion that both of them are *Apodynerus troglodytes troglodytes* (de Saussure, 1856). Consequently *Antepipona malabarica* Lambert, 2004, and *Antepipona narendrani* Lambert, 2004, are here synonymized under *Apodynerus troglodytes troglodytes* (de Saussure, 1856). The present paper also reports the parasitic association of Strepsiptera in the genus *Apodynerus* for the first time.

Material and methods

The materials examined are deposited in the 'National Zoological Collections' of the Hymenoptera Section of the Zoological Survey of India, Kolkata (NZC). The pinned-and-dried specimens were studied and photographed by using a Leica Stereo microscope with LAS software version 3.6.0.

Abbreviations used for the Museums: BMNH = The Natural History Museum, London, UK; MRSN = Museo Regionale di Scienze Naturali di Torino, Italy; NZC = Zoological Survey of India, Kolkata, India; ZSIC = Western Ghat Regional Centre, Zoological Survey of India, Kozhikode (= Calicut), India.

Abbreviations used for the terms: H = Head; M = Mesosoma; S = Metasomal sternum; T = Metasomal tergum.

Results

***Apodynerus formosensis indicus* Giordani Soika, 1994**

(Figs. 1-6)

Apodynerus formosensis indicus Giordani

Soika, 1994: 208 (key), 218, female - "Nepal: Taplejung District, Snagu, 6500 ft" (BMNH).

Diagnosis: Female (Fig. 1): Length (H+M+T1+T2) 8.5 mm. Clypeus (Fig. 2) with dense and deep punctures, apex distinctly emarginate, in frontal view convex without carina and in lateral view convex; punctures on frons and vertex more or less dense, slightly smaller and sparser in posterior part of vertex; anterior face of pronotum glossy and punctured laterally, with a few median striae; mesepisternum (Fig. 4) with dense punctures, interspaces non-cariniform; border between lateral face and dorsal face of propodeum ill-defined; submarginal carina of propodeum (Fig. 5) short and wide; T2 in lateral view only slightly convex laterally; baso-median furrow of S2 distinct; punctuation of S2 finer than *Apodynerus formosensis formosensis* and *A. f. continentalis*. Body with moderately short setae.

Colour: Body black with yellow and ferruginous markings. Yellow markings as follows: base of mandible; clypeus except for a central black spot; a spot above interantennal space; a strip along the inner orbits of lower lobes of eyes; metanotum almost entirely; T1 with narrow apical band, which is very slightly tapered at sides; bands wider and less regular on T2 and S2. Ferruginous markings as follows: scape; ventral side of funicular segments; a large mark on temple; front half of dorsal face of pronotum, and a narrow band on posterior margin; a mark on top of mesepisternum; a broad band on scutellum; two spots on dorsal side of propodeum; two spots on posterior declivity of propodeum; propodeal valvula; apex of femora, tibiae and tarsi of all legs; tegula; parategula; narrow bands on the apex of T3-T5 and S3-S5. Wings light brown.

Male: Unknown.

Material examined: INDIA: Arunachal Pradesh, Upper Siang district, Geku, 1♀, 16.ix.2002, Coll. Mihir Sil & Party, NZC Regd. No. 15683/H3.

Distribution: India (new record): Arunachal Pradesh; Nepal.

Discussion: In the original description by Giordani Soika (1994) the body is stated to be black with ferruginous markings. But in the specimen studied here from Arunachal Pradesh some markings are yellow instead of ferruginous, such as the marks on clypeus, interantennal space, inner orbits of the lower lobes of the eyes, metanotum, T1, T2 and S2.

***Apodynerus troglodytes troglodytes* (de Saussure, 1856)**

Odynerus troglodytes de Saussure, 1855: 249, male (in subgenus *Odynerus* division *Parodynerus*), "Le Sénégal" (MRSN).

Apodynerus troglodytes troglodytes; Gusenleitner, 1988: 180.

Antepipona malabarica Lambert, 2004: 554 (key), 560, ♀, "India, Kerala, Calicut University Campus", holotype ♀ (ZSIC). **Syn. n.**

Antepipona narendrani Lambert, 2004: 558, ♀♂, "India, Kerala, Sulthan Bathery", holotype ♀ (ZSIC). **Syn. n.**

Synonymy of *Antepipona malabarica* and *Antepipona narendrani* under *Apodynerus troglodytes troglodytes*:

The holotype of *Antepipona malabarica* Lambert, 2004, is a female collected on the Calicut University Campus, Kerala, India (Regd. No. ZSI/WGRC/I.R. – INV. 1921; ZSIC 1. 0102) (Figs. 7 & 8). The holotype of *Antepipona narendrani* Lambert, 2004 is also a female, collected from Sulthan Bathery, Kerala, India (Regd. No. ZSI/WGRC/I.R. – INV. 1920; ZSIC 1. 0101) (Figs. 9 & 10). We examined both holotypes and came to the conclusion that both of them are *Apodynerus troglodytes troglodytes* (de Saussure, 1856) and thus we synonymize both of them under the latter.

Additional material examined (other than the specimens studied in Girish Kumar et al. 2013):

INDIA: Andaman & Nicobar Islands, South Andaman, Ferrargunj, 1♂, 9.xii.2013, Coll. G. Srinivasan & Party, NZC Regd. No. 15686/H3; South Andaman, Ferrargunj, Sonapad, 1♀ & 4♂, 26.xii.2013, Coll. G. Srinivasan & Party, NZC Regd. Nos. 15687/H3–15691/H3; Middle Andaman, Rangat, 1♂, 5.i.2014, Coll. G. Srinivasan & Party,

Additional notes on the genus *Apodynerus* Giordani Soika, from India

NZC Regd. No. 15692/H3; North Andaman, Mayabunder, 2♂, 7.i.2014, Coll. G. Srinivasan & Party, NZC Regd. Nos. 15693/H3 &

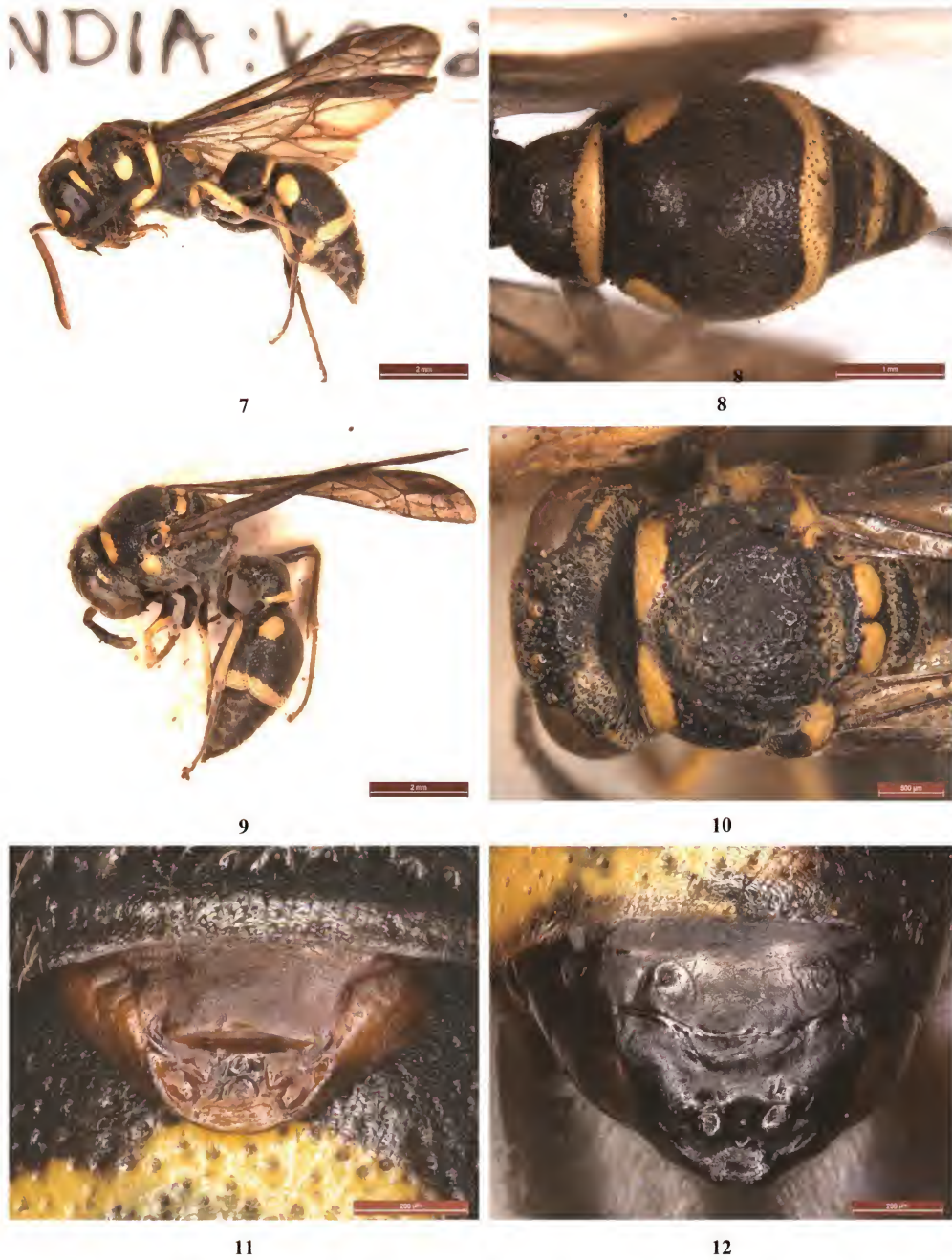
15694/H3. Kerala, Wayanad district, Chulliyodu, 1♀, 4.x.2014, Coll. P.Girish Kumar, NZC Regd. No. 15695/H3; Kozhikode district

Plate I



Figs. 1–6. *Apodynerus formosensis indicus* Giordani Soika ♀. 1. Body profile; 2. Head frontal view; 3. Head & mesosoma dorsal view; 4. Head & mesosoma lateral view; 5. Propodeum; 6. Metasoma dorsal view.

Plate II



Figs. 7–8. *Antepipona malabarica* Lambert Holotype. 7. Body profile; 8. Metasoma dorsal view. Figs. 9–10. *Antepipona narendrani* Lambert Holotype. 9. Body profile; 10. Head & mesosoma dorsal view. Figs. 11–12. *Apodynerus troglodytes troglodytes* (de Saussure) metasomal segments with parasitic strepsipteran female.

Additional notes on the genus *Apodynerus* Giordani Soika, from India

Nanminda, 2♀ & 2♂, 4.vi.2014 & 6.x.2014, Coll. P. Girish Kumar, NZC Regd. Nos. 15696/H3–15699/H3. West Bengal, Cooch Behar district, Chhatoa, 2♂, 23.xii.2013, Coll. B. Mitra & Party, NZC Regd. Nos. 15700/H3 & 15701/H3.

Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Karnataka, Kerala, West Bengal. Elsewhere: China (including Hong Kong), Myanmar, Thailand, Laos, Vietnam, Malaysia (including Sarawak, Sabah), Singapore, Indonesia (Sumatra, Krakatau Islands, Kepulauan Seribu, Java, Kangean Islands, Bali, Karimunjawa Islands, Sulawesi, Moluccas, Lombok, Sumbawa, Kalimantan).

Ethology: In this study we observed an interesting behaviour, i.e., parasitic association of strepsipteran insects, for the first time in the genus *Apodynerus*. Female strepsipteran parasites were observed under the metasomal terga segment of *Apodynerus troglodytes troglodytes* in one female specimen from South Andaman (Fig. 11) and a male specimen from West Bengal (Fig. 12). The female strepsipteran endoparasites are larviform, leg-less and wingless, without eyes, antennae and external genitalia. In figures 11 & 12 the female strepsipteran parasites are seen as partially projecting from wasp's metasoma.

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